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Your file *Votre référence*
CIAR Reference No : 80087

Our file *Notre référence*
14-HPAC-01085

Impact Assessment Agency of Canada
Attn: Stefan Crampton
Project Manager, Pacific and Yukon Region
210A-757 West Hastings Street
Vancouver, BC, V6C 3M2

Via email: Stefan.Crampton@iaac-aeic.gc.ca

Dear Stefan Crampton:

**Subject: Crown Mountain Coking Coal Project – Fisheries and Oceans Canada’s
Technical Review Comments on the Environmental Impact Statement**

NWP Coal Canada Ltd. (the Proponent) submitted a revised Environmental Impact Statement (EIS) for the Crown Mountain Coking Coal Project (the Project) to the Impact Assessment Agency of Canada (the Agency) on December 15, 2023. On January 29, 2024, after determining conformity with the EIS Guidelines, the Agency requested that the Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO) provide technical review of the EIS.

DFO’s technical review comments are provided in Attachment 1 to this letter. DFO is providing technical, science-based information and knowledge, pursuant to its mandate, to inform the assessment of this Project’s potential effects on the receiving environment and valued ecosystem components. The information provided by DFO was prepared using the Project documentation made available to date. DFO focused our technical review on the Fish and Fish Habitat Assessment (Chapter 12) and associated appendices. Should changes occur to the proposed Project, DFO’s advice may need to be revised. Any information or comments received from DFO in this context does not relieve the Proponent of its obligations to respect all applicable federal Acts and regulations.

DFO has four major concerns regarding the proposed Project:

1. **Project Interactions with Fish and Fish Habitat**—DFO is concerned that the upper extent of fish habitat has not been adequately characterized and therefore the Project interactions with fish and fish habitat are not fully understood. In addition, there are potential Project interactions with fish and fish habitat in Grave and Upper Alexander creeks that are not fully understood. See Technical Review comments for details.
2. **Effects of Site Water Management on Instream Flow Requirements**—The characterization of residual effects associated with habitat loss due to changes in water quantity (Section 12.5.4.2.2) has flaws including the methodology to assess the effects of the project on the environmental flow needs. Additional work is required to confirm the operational water demand of the mine, and the runoff changes from vegetation and landscape alteration. Once a suitable methodology has been identified, and water diversions confirmed, effects due to changes in water quantity should be reassessed for flow nodes in the Grave Creek and Alexander Creek watersheds, and the Project Effects Assessment (Section 12.4) should be updated. See Technical Review comments for details.
3. **Cumulative Effects**—As indicated in DFO’s January 10, 2023, letter to the Agency (Attachment 2), the Proponent must conduct a fulsome assessment of cumulative effects focussing on the potential impacts to Westslope Cutthroat Trout (WCT) from the loss of habitat and the translocation of the resident population. The Cumulative Effects Assessment (Section 12.6) relies on the notion that a net loss of fish habitat in the Aquatic Regional Study Area (RSA) will not occur provided that the proposed habitat loss is adequately offset, and therefore no effect to the persistence of WCT is expected. However, the EIS acknowledges that “the potential resident population is less likely to be as resilient and able to adapt to removal of their entire home range within the Fish and Fish Habitat LSA” (Section 12.5.4.3.1). DFO requests that the Proponent demonstrate how the Project impacts to the resident subpopulation of WCT in Alexander Creek are consistent with the *Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi), British Columbia Population, in Canada* (Management Plan).¹

Assessing cumulative effects is especially important given the recent observations of population declines and reduced recruitment of WCT in the Elk Valley that are described in two recent Evaluation of Cause reports by Teck Coal Ltd. In the Grave Creek subpopulation, specific concerns related to WCT recruitment have been identified². Existing habitat impacts on fish and fish habitat in Grave Creek watershed include habitat fragmentation due to the dam at Harmer Creek sediment pond; calcification of the streambed; and selenium toxicity. Potential future pressures to fish and fish habitat within Grave Creek watershed arising from the Project should be assessed in consideration of

¹ Fisheries and Oceans Canada. 2017. Management Plan for the Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*), British Columbia Population, in Canada. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 116 pp

² Harmer Creek Evaluation of Cause Team. 2023. Evaluation of Cause – Reduced Recruitment in the Harmer Creek Westslope Cutthroat Trout Population. Report prepared for Teck Coal Limited. [Harmer-Creek-Evaluation-of-Cause - Report-March-2023.pdf \(teck.com\)](https://www.teck.com/~/media/Teck/Canada/Projects/Grave-Creek-Evaluation-of-Cause-Report-March-2023.pdf)

cumulative effects. The construction and maintenance of the Project access road and the construction of the Grave Creek backup reservoir are potential pressures that may cause adverse effects to fish and fish habitat. Any impacts in addition to the existing unmitigated cumulative impacts in this watershed, have potential to affect the conservation of the isolated population of WCT in Grave Creek. DFO must consider these existing cumulative effects when deciding whether to grant any additional *Fisheries Act* authorizations for coal mining activities that have a potential to cause additional HADDs within the Grave Creek watershed. These Grave Creek watershed pressures must be included in the cumulative effects assessment.

- 4. Measures to Mitigate and Offset**—Consistent with DFO’s January 10, 2023 letter (Attachment 2), DFO continues to have major concerns regarding the availability of appropriate measures to offset residual impacts to WCT habitat and to mitigate death of fish. To avoid, mitigate and offset effects to WCT, both the scale of Project impacts should be reduced and the scale and scope of offsetting should be substantially increased. DFO suggests, to appropriately counterbalance effects of the Project on WCT, that the Proponent propose offsets that benefit the isolated resident fish that would be directly impacted by the Project. DFO recommends that the Proponent develop an offset proposal that is consistent with DFO policy, and that the Proponent engage with Indigenous Nations during proposal development. DFO recommends that the Proponent become familiar with the Management Plan.

If you have any questions regarding the advice and comments provided in the attached, please contact James Dwyer at our Vancouver office by email at James.Dwyer@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

**McCleary,
Richard**

Digitally signed by McCleary, Richard
DN: C=CA, O=GC, OU=DFO-MPO, CN="McCleary, Richard"
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Richard McCleary, PhD, RPBio.
Section Head, Impact Assessment and Major Projects
Fish and Fish Habitat Protection Program

Attachment 1: Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

Attachment 2: Fisheries and Oceans Canada Letter to the Impact Assessment Agency of Canada Regarding the Crown Mountain Coking Coal Project, January 10, 2023



Fisheries and Oceans
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Attachment 1: Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

ID#	Reviewing Agency / Group	Reviewer	Date NWP Received	Discipline / Topic	Chapter / Document	Section / Subsection Number or Appendix Number	Section / Subsection Title (if provided)	pg no.	Statement/Topic in Omission from Document	Comment Type	Round 1 Reviewer Comment
DFO-001	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.1	Introduction	12-2	12.1.1 (Regulatory and Policy Setting); Table 12.1-1 Regulatory Considerations and Guidance Documents Relevant to Fish and Fish Habitat and Aquatic Resources	Comment	Update Table 12.1-1 to include the <i>Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisii)</i> , <i>British Columbia Population</i> , in Canada (DFO 2017), which establishes goals and objectives for management of the species. The overarching management goal is the long-term persistence of the species within its native range. The management objectives include: to maintain the native distribution and genetic diversity of populations; to maintain wild populations at abundance levels that prevent at-risk status assessment; and to maintain, or rehabilitate, the capacity of natural habitat to meet abundance targets for populations. Westslope cutthroat trout, British Columbia population was designated as Special Concern due to concerns regarding the introduced species (hybridization and competition), habitat loss and degradation, and increasing exploitation.
DFO-002	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.2	Scope of the Assessment	12-8	12.2.1.1 Fish Valued Components) re: Kokanee	Comment	"Federally, 24 DU of sockeye salmon were assessed under SARA (2002), with eight subpopulations listed as Endangered, two as Threatened, five as Special Concern, and eight as Not at Risk; however, the Kokanee ecotype was not assessed due to its unique lifecycle (COSEWIC, 2017)."
DFO-003	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.1	Existing Regional and Local Information (12.4 Existing Conditions)	12-27	12.4.1.1 (Regional and Local Environment); Figure 12.4-2 (Fish and Fish Habitat VC Distribution in the Fish and Fish Habitat LSA)	Comment	Update the sentence to reflect that there are nine Designatable Units (DUs) in the Fraser River Drainage Basin that are listed as Not at Risk (COSEWIC 2017). We also note that COSEWIC (2017) does not provide an explicit reason why Kokanee was not assessed, only that the kokanee ecotype was not considered in the assessment. Update Figure 12.4-2 using different colours to distinguish between fish observations from the BC provincial fish database and baseline survey site locations. According to the map legend, orange circles represent observations of Westslope cutthroat trout recorded in the BC provincial fish database; however, DFO assumes the orange circles in the inset of the map are intended to represent Fish and Fish Habitat Survey Sites, not WCT observations.
DFO-004	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.1	Existing Regional and Local Information (12.4 Existing Conditions)	12-27	12.4.1.1 (Regional and Local Environment); Figure 12.4-2 (Fish and Fish Habitat VC Distribution in the Fish and Fish Habitat LSA)	Comment	In addition, provide a higher resolution map of West Alexander Creek to facilitate review. Currently, in order to follow along with the text in understanding fish distributions in West Alexander Creek, reviewers are relying on an LSA-wide map with a small inset showing only a portion of the creek. DFO expects that the scale of the final fish habitat map will align with the scale recommended within the fish habitat inventory methodology that the Figure 12.4-2 shows the project footprint overlapping with several tributaries of Upper Alexander Creek. Confirm that Appendix 10A details how the construction of the pits and the destruction of the wetlands and aquifers in their lower reaches and along West Alexander Creek will affect the runoff pattern. For example, will the loss of these natural storage features result in increased runoff during freshet and early summer and decreased discharge from West Alexander Creek during the fall and winter?
DFO-005	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-34	12.4.2.1 Methods; 12.4.2.1.1 (Lotic Ecosystems); Fish Habitat Assessment Procedures	Comment	"Interactions between the Project and fish and fish habitat are further discussed in Section 12.5. Reaches with the potential for direct habitat loss were assessed following the B.C. Fish Habitat Assessment Procedures (FHAP) Level 1 (Johnston and Slaney, 1996). The baseline fish habitat surveys were completed on the fish bearing reaches of Alexander Creek (ALE7 to ALE10) and West Alexander Creek (WAL1 and WAL2), as described in the Fish Community methods section below. Fish inventories were not completed on reaches with prior knowledge of fish bearing status in the provincial Habitat Wizard Fish and Fish Habitat Database (ALE7, GRA1 to GRA4; Government of B.C., 2018)."

DFO remains concerned that the upper extent of fish habitat has not been adequately characterized. Johnston and Slaney (1998) is a procedure for assessing fish habitat condition. It is not the correct procedure to assess fish habitat extent. An example of an acceptable procedure to determine the extent of fish habitat is Fish Stream ID Guidebook (BC 1998). Please provide the methodology that was applied and your QEPs determination of the upper extent of fish habitat for each tributary and West Alexander Creek.

Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

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DFO-006	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-34	12.4.2.1 Methods; 12.4.2.1.1 (Lotic Ecosystems); Fish Habitat Assessment Procedures	Comment	"Lower Alexander Creek, Grave Creek, and the two unnamed Grave Creek tributaries did not require a Level 1 FHAP survey because the Project is not anticipated to affect those areas." The sentence suggests there are no Project effects in Grave Creek, but part of the Project footprint overlaps with an unnamed tributary of Grave Creek and the access roads leading to the mine are generally located within the Grave Creek watershed. Given the sensitivity of the fish population in Grave Creek (see memo) and the potential for effect from road construction including sediment inputs and water diversion, describe the baseline Provide the exact page in the document titled Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators BC Ministry of the Environment, 2016), that indicates that no additional screening is required if the number of days when below 20% MAD does not increase. Given the sensitivity of the fish westslope cutthroat trout population in Grave Creek, and recent recruitment failures, complete a robust environmental flow needs assessment. For example, the 2022 British Columbia Environmental Flow Needs Policy identifies cumulative diversion amount thresholds for high sensitivity habitats. Ensure that the estimates of cumulative diversion quantities from water use and mining related hydrologic change are reasonable. Provide the citation for the peer-reviewed passage methodology and modified instream flow study that were applied. Provide the name of the QEP that oversaw the assessment.
DFO-007	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-35	12.4.2.1 Methods; 12.4.2.1.1 (Lotic Ecosystems); Instream Flow Study	Comment	"Alexander Creek was delineated into 11 reaches; 7 of these were studied in detail during the baseline programs. Alexander Creek Reaches 7, 8, and 9 are immediately downstream or adjacent to the Project (Figure 12.4-5). Reaches 1 and 2 are also downstream, but further offsite, and mark the downstream limit of the Fish and Fish Habitat LSA in the Alexander Creek watershed. Reaches 10 and 11 are upstream of the Project and are not expected to be affected by the Project and, are therefore considered to be reference areas."
DFO-008	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-45	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks	Comment	Clarify whether effects to Upper Alexander Creek (e.g., changes to flow) have been adequately assessed, and whether the upper reaches are appropriate as reference areas given their proximity to the Project. Provided maps (e.g., Figure 12.4-2) show the project footprint overlapping with several tributaries of Upper Alexander Creek.
DFO-009	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-45	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks	Comment	"West Alexander Creek has four non-fish bearing tributaries: Unnamed West Alexander 1 (UWA1; first order tributary), Unnamed West Alexander 1b (UWA1b; first order tributary), Unnamed West Alexander 2 (UWA2), and Unnamed West Alexander 3 (UWA3; first order tributary)."
DFO-010	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-46	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks	Comment	Provided maps (e.g., Figure 12.4-2) show the project footprint overlapping with considerably more tributaries than West Alexander Creek. West Alexander Creek tributaries named and unnamed: "Unnamed West Alexander Creek 1b (UWA1b) is a first order, unnamed tributary on the east side of West Alexander Creek, which is located approximately 5.57 km northwest from the Alexander Creek/West Alexander Creek confluence. There are two reaches on this stream, UWA1b-1 and UWA1b-2. Unnamed West Alexander Creek 1b Reach 1 is 0.18 km long with an average gradient of 10%. The stream is deeply channelized near the confluence with West Alexander Creek. Unnamed West Alexander Creek 1b Reach 2 is 1.39 km long with an average gradient of 20.0%. Unnamed West Alexander Creek 1b Reach 2 starts at the increase in gradient upstream of UWA1b-1 and ends at the headwaters. The slope increases to >30% for 200 m and this steep gradient is considered a barrier to fish movement. Unnamed West Alexander Creek 1b Reach 2 is classified as a step-pool morphology and is considered non-fish bearing based on gradient (FPCBC, 1998)." Clarify the presence/absence of fish in UWA1b. It is DFO's understanding that the confluence to UWA1b is located in Reach 1 (WAL1) of West Alexander Creek, which is fish-bearing. There is no explanation provided as to why UWA1b Reach 1 and the initial portion of Reach 2 are considered non-fish bearing. It appears from the above paragraph that the 200 m stretch of >30% gradient is considered a barrier to fish movement, suggesting the creek below this is accessible to fish. As previously stated, provide the methodology that was used to determine the upstream extent of fish habitat, a non-fish bearing status report for each reach where you have assigned this status, a corresponding map of appropriate scale, and the name of the QEP that made each non-fish bearing designation.

Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

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DFO-011	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-47	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks	Comment	"All four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1." Confirm that this description is correct for UWA1, because Sections 12.4.2.2.1 & 12.5.4.1.1 describe a 10-m high waterfall on Unnamed West Alexander Creek 2 (UWA2), located 15 m from the confluence with WAL3. Assuming the above statement is correct, does that mean it is fish-bearing, and if so, was that section of the tributary included in the calculation of the total habitat loss footprint? Table 12.4-7 is missing habitat data, which are available elsewhere in the chapter. For example, Section 12.4.2.2.1 describes habitat metrics (e.g., reach lengths) of WAL3 and West Alexander tributaries and those data are also provided in Table 12.5-8. Update the table to include all data. The table should also present the gradients at each site, given that this metric is relied upon to determine fish-bearing status.
DFO-012	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-47	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Table 12.4-7 (Habitat Summary and Fish Bearing Status for Alexander Creek and West Alexander Creek Reaches)	Comment	"The gradient barrier and frequent dewatering of WAL3 was noted to prevent fish migration into WAL4 within West Alexander Creek, which was also confirmed to be fish bearing. All of the unnamed tributaries to West Alexander Creek (considered non-fish bearing) were noted to contain either gradients that are not conducive to fish passage, or waterfalls." Clarify the presence/absence of fish in WAL4, as the first sentence above suggests that it is fish-bearing. Also clarify the presence/absence of fish in the unnamed tributaries - there are sections of the EIS that suggest that portions of some of the unnamed tributaries are fish-bearing. For example, in the section preceding the above excerpt, the EIS states that "all four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1." In addition, the EIS does not make it clear why UWA1b is considered non-fish bearing. "Low amounts of calcite was observed in ALE7, ALE8, and ALE9, and no calcite was observed at the remainder of the sample sites (Table 12.4-8)." Clarify the statement given that Table 12.4-8 indicates calcite was also observed at ALE1 and ALE2.
DFO-013	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-48	12.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Barriers to Fish Passage	Comment	"The gradient barrier and frequent dewatering of WAL3 was noted to prevent fish migration into WAL4 within West Alexander Creek, which was also confirmed to be fish bearing. All of the unnamed tributaries to West Alexander Creek (considered non-fish bearing) were noted to contain either gradients that are not conducive to fish passage, or waterfalls." Clarify the presence/absence of fish in WAL4, as the first sentence above suggests that it is fish-bearing. Also clarify the presence/absence of fish in the unnamed tributaries - there are sections of the EIS that suggest that portions of some of the unnamed tributaries are fish-bearing. For example, in the section preceding the above excerpt, the EIS states that "all four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1." In addition, the EIS does not make it clear why UWA1b is considered non-fish bearing. "Low amounts of calcite was observed in ALE7, ALE8, and ALE9, and no calcite was observed at the remainder of the sample sites (Table 12.4-8)." Clarify the statement given that Table 12.4-8 indicates calcite was also observed at ALE1 and ALE2.
DFO-014	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-48	2.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Calcite Assessment	Comment	"The gradient barrier and frequent dewatering of WAL3 was noted to prevent fish migration into WAL4 within West Alexander Creek, which was also confirmed to be fish bearing. All of the unnamed tributaries to West Alexander Creek (considered non-fish bearing) were noted to contain either gradients that are not conducive to fish passage, or waterfalls." Clarify the presence/absence of fish in WAL4, as the first sentence above suggests that it is fish-bearing. Also clarify the presence/absence of fish in the unnamed tributaries - there are sections of the EIS that suggest that portions of some of the unnamed tributaries are fish-bearing. For example, in the section preceding the above excerpt, the EIS states that "all four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1." In addition, the EIS does not make it clear why UWA1b is considered non-fish bearing. "Low amounts of calcite was observed in ALE7, ALE8, and ALE9, and no calcite was observed at the remainder of the sample sites (Table 12.4-8)." Clarify the statement given that Table 12.4-8 indicates calcite was also observed at ALE1 and ALE2.
DFO-015	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-55	2.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Table 12.4-9 (Summary of Tagged Fish during the Population Study (2020-2021))	Comment	Provide the name of the OEP that completed the calcite assessment and confirm that they have adequate Clarify the definitions of Lower, Middle, and Upper Alexander creek. The definitions of each do not appear to be provided in this chapter or in Chapter 10 (Surface Water Quantity Assessment).
DFO-016	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-55	2.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Upper Alexander Creek	Comment	"These fish were present in Upper Alexander Creek for the upstream portion of Middle Alexander Creek) during the overwintering and spawning periods. Spawning surveys were not conducted in this portion of Alexander Creek (or other downstream portions) due to time constraints." Provide rationale as to why spawning surveys were not conducted in Alexander Creek at a later date. This is particularly important given that the EIS proposes to salvage and translocate westslope cutthroat trout from West Alexander Creek into Alexander Creek.

Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

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DFO-017	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-56	2.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Key Observations and Findings of the Population Study	Comment	<p>"There appears to be two populations or sub-populations of Westslope Cutthroat Trout in Alexander Creek:</p> <ul style="list-style-type: none"> • Smaller bodied "fluvial resident" fish that hold, feed, overwinter, and spawn in Upper Alexander Creek and West Alexander Creek. Note that movement of these fish between Upper Alexander and West Alexander was not recorded. A portion of these fish are believed to overwinter in interstitial spaces fed by groundwater, but additional data are needed to confirm/strengthen this observation; and • Larger bodied "fluvial migratory" fish that leave Alexander Creek in the fall (September/October) to overwinter in the Elk River and return to Alexander Creek in the spring (May/June), likely to spawn. <p>Spawning occurs in Reach 1 of West Alexander Creek.</p> <ul style="list-style-type: none"> • Spawning may occur in other reaches, but continued assessment would be required to confirm this; • The fluvial migratory Westslope Cutthroat Trout likely spawn in Alexander Creek. Additional studies are required to confirm this observation; and • Fluvial resident fish likely spawn in Upper Alexander Creek. Additional studies are required to confirm." <p>Until evidence shows otherwise, DFO considers the WCT in West Alexander Creek a genetically-pure population. The tagging and spawning surveys have been very helpful for understanding the life history strategy of the Westslope Cutthroat Trout in the headwaters of Alexander Creek. Such isolated resident populations of this Special Concern species have a very high conservation value. In Alberta, the habitat of similar isolated populations have been designated a Critical Habitat under the Federal Species at Risk Act. DFO recommends that the Province's ongoing genetic studies of this species in the Upper Kootenay watershed be expanded to include West Alexander and Upper Alexander Creeks.</p> <p>"Surveyed reaches considered to be fish bearing included ALE1 to ALE10, WALL, and WALL. The fish species captured included WCT, Bull Trout, Mountain Whitefish, and Eastern Brook Trout (Table 12.4-10)."</p> <p>Update Table 12.4-10 to provide the survey data from ALE1 and ALE2.</p>
DFO-018	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.4.2	Baseline Programs (12.4 Existing Conditions)	12-57	2.4.2.2 Results; 12.4.2.2.1 Alexander and West Alexander Creeks; Fish Inventory and Distribution; Table 12.4-10 Fish Inventory Sampling Summary for Fish Bearing Reaches in the Alexander Creek Watershed)	Comment	<p>How were the rankings in Table 12.5-1 derived for each activity-VC interaction? This should be made clearer by providing the Pathway(s) of Effect (PoE) for each activity-VC interaction as an additional column. For example, what is/are the PoE(s) for excavation of road bed materials from the North Pit for use on Grave Creek road? This would also prove useful later in the assessment to show how proposed mitigation measures would reduce the potential impact from a higher (pre-mitigation) to lower (post-mitigation) ranking.</p> <p>"The potential effects identified in Table 12.5-2 are discussed in the context of each Project phase (Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure) in the following subsections."</p> <p>Provide a figure that is representative of each Project phase showing the mine footprint interaction with fish and Fish Habitat VCs, to facilitate review and assessment. For example, it would be useful to know where the interim sediment pond is located.</p> <p>DFO requires the proponent to implement the best available mitigation measures and standards. Note that Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998) is over 20 years old, and some of the recommendations may be outdated. For example, the detonation technology that was assessed by Wright and Hopky (1998) may differ from the technology that will be applied by the proponent.</p>
DFO-019	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.5.2	Project Effects (12.5 Project Effects Assessment)	12-80	12.5.2.1 Project Interactions; Table 12.5-1 (Project-Fish and Fish Habitat VC Interaction Matrix	Comment	<p>12.5.2.2 Discussion of Potential Effects</p>
DFO-020	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.5.2	Project Effects (12.5 Project Effects Assessment)	12-89	12.5.2.2 Discussion of Potential Effects	Comment	<p>12.5.2.2.6 Change in Fish and Fish Habitat Due to Blasting</p>
DFO-021	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.5.2	Project Effects (12.5 Project Effects Assessment)	12-99	12.5.2.2.6 Change in Fish and Fish Habitat Due to Blasting	Comment	<p>12.5.2.2.6 Change in Fish and Fish Habitat Due to Blasting</p>

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DFO-022	DFO	R McCleary	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-111	12.5.3.1.5 Changes in Water Quality	Comment	The proponent is proposing a mitigation strategy of adding anti-scalant agents to minimize the potential for calcite formation. Calcite precipitation from rock spilling will occur in perpetuity. Water treatment may not be sustainable in perpetuity. Why has the proponent not applied source control as the preferred avoidance measure? As an avoidance measure, source control is at the top of the mitigation hierarchy. In terms of risks, there is no proven technology to remediate calcified streams. Indicate why source control is not selected as the mitigation option. Detail the uncertainties and risks with the treatment option (addition of anti-scalant agents) to address calcite. Include cost and funding information for operating these treatment facilities in perpetuity. "Offsetting measures should support available fisheries management objectives and local restoration priorities and be conducted in a manner consistent with DFO's offsetting policy (DFO, 2019b)."
DFO-023	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-115	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss	Comment	DFO recommends that the proponent become familiar with the <i>Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisii)</i> , <i>British Columbia Population, in Canada</i> (DFO 2017), which establishes goals and objectives for management of the species. Regarding local restoration priorities, we recommend that the proponent engage with Indigenous peoples potentially affected by the offsetting plan. In preparing an offsetting plan, the <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> (DFO 2019) highlights the importance, and good practice, for proponents to engage Indigenous peoples early in the planning phase of the offsetting plan. Indigenous peoples and the knowledge of the Indigenous peoples of Canada can inform the design of measures to offset residual effects on fish and fish habitat. Update the section to include Principle 4 from the <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> (DFO 2019) - currently only three of the four guiding principles are provided. Principle 4: Measures to offset should generate self-sustaining benefits over the long term. The benefits of the measures to offset fish and fish habitat should last at least as long as the adverse effects from the works. Confirm that the calculations of riparian habitat footprint for each reach are correct, and if required update the table. Section 12.5.4.2.5 (pg 12-137 to -138) implies that a 31.5 m buffer zone was used to calculate the riparian habitat loss. While the total riparian habitat on fish-bearing streams appears to be correct (i.e., approximately 36.1 ha) the calculations for each reach do not, assuming the reach lengths in the table are correct: WAL1 u/s of Spillway: 5,002 m x 63 m = approx. 31.5 ha WAL2: 174 m x 63 m = 1.1 ha WAL1 d/s of Spillway: 550 m x 63 m = 3.5 ha
DFO-024	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-116	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss	Comment	Update Figure 12.5-2 to include all the fish habitat loss in West Alexander Creek, including the riparian buffer. If necessary, provide more than one figure. The figure currently only shows the fish-bearing habitat loss due to mine design and development. It does not show the habitat loss due to changes in surface water quantity (i.e., loss of habitat in West Alexander Creek from the Main Sediment Pond to its confluence with Alexander Creek). Moreover, the figure does not show the non-fish bearing habitat loss. The riparian buffers in both the fish-bearing and non-fish bearing watercourses should also be shown.
DFO-025	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-116	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss; Table 12.5-7: Summary of Fish Bearing Habitat Loss Due to the Project	Comment	Update Table 12.5-8 to include the area for UWA1, and subsequently incorporate that area into the total area of non-fish bearing habitat loss.
DFO-026	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-117	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss; Figure 12.5-2 Fish Habitat Loss in the Fish and Fish Habitat	Comment	Update Figure 12.5-2 to include the area for UWA1, and subsequently incorporate that area into the total area of non-fish bearing habitat loss.
DFO-027	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-118	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss	Comment	Update Table 12.5-8 to include the loss of riparian habitat associated with non-fish bearing streams, as their benefit will be lost to downstream fish productivity (e.g., nutrient and food input).
DFO-028	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-118	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss	Comment	Update Table 12.5-8 to include the loss of riparian habitat associated with non-fish bearing streams, as their benefit will be lost to downstream fish productivity (e.g., nutrient and food input).

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DFO-029	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-118	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss	Comment	<p>"The likelihood that most of the offsetting available will come from outside of the Fish and Fish Habitat LSA is a key topic for DFO and Indigenous consultation. DFO consultation is in progress and the decision of whether the effect on habitat loss due to the Project can be adequately compensated for will reside outside of the scope of this assessment. Offsetting a potentially resident population's home range is a policy decision and will be driven by DFO goals and is therefore outside the scope of this assessment. For the purpose of this assessment, however, it is assumed that should the Project proceed, DFO will have made a policy decision to issue an authorization under the Fisheries Act and that the offsetting measures ultimately selected in support of that authorization will be sufficient to offsetting the residual effects of the Project such that they are not significant. This is a reasonable conclusion since development of the Project would obviously not be able to lawfully occur in the absence of such an authorization."</p> <p>DFO remains concerned that the proposed offsetting will not counterbalance the impacts from this mine, given the scale of the project, the sensitivity of the resident population of westslope cutthroat trout, and performance concerns with other coal industry offsetting projects for destruction of tributary habitat. DFO is also not satisfied that the impacts to fish habitat have been fully avoided and/or minimized. DFO is also concerned that the predicted impacts to other resident fish populations from coal mining in the Elk Valley have been understated. For example, unanticipated effects have included one extirpation, various populations declines, and habitat impacts that have not been remedied.</p> <p>The Proponent appears to be relying on DFO to make a policy decision regarding appropriate measures to offset the loss of habitat of a resident population of WCT. The main decision that DFO will make is whether or not to issue a Fisheries Act authorization. As per subsection 34.1(1) of the Fisheries Act, the Minister, prescribed person or prescribed entity, will consider various factors including whether there are measures to avoid, mitigate or offset the harmful alteration, disruption or destruction of fish habitat (HADD). It is the Proponent's responsibility to propose measures to offset the fully counterbalance the HADD. At this point, the adequacy of the proposed offsetting measures is questionable. The Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019) provides guidance on undertaking effective measures to offset death of fish and the harmful alteration, disruption or destruction of fish habitat, consistent with the fish and fish habitat protection provisions of the Fisheries Act.</p> <p>Provide more detail regarding the derivation of the relative habitat values (RHVs) in Table 12.5-9. Provide the rationale and citations for the RHVs. Provide the name of the OEP(s). Explain how the habitat in the proposed offsetting measures at Elk River Side Channel and Brule Creek can be 2-3 times more valuable than the West Alexander Creek habitat? The habitat of the resident fish populations in the headwaters of Alexander Creek is the most valuable habitat. If the SARA status of the Pacific population of westslope cutthroat trout is upgraded to Threatened, those areas would be candidates for Critical Habitat designation. The Elk River and Brule Creek may not.</p> <p>In addition, per the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019) the equivalency analysis must account for time lag, uncertainty, and, in the case of habitats being proposed for restoration/enhancement, the relative value of the existing habitat.</p> <p>"UWA1b-1 and UWA1b-2 are two reaches on a tributary (UWA1) that enters on the eastern bank of West Alexander Creek. This tributary (both reaches) is considered non-fish bearing due a very steep gradient"</p> <p>Clarify if UWA1 and UWA1b are separate tributaries of West Alexander Creek. It is DFO's understanding that UWA1 and UWA1b are distinct tributaries of West Alexander Creek, and that UWA1b-1 and UWA1b-2 are two reaches on the unnamed tributary, UWA1b.</p>
DFO-030	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.3	Mitigation Measures (12.5 Project Effects Assessment)	12-119	12.5.3.1.9 Measures to Offset Direct and Indirect Habitat Loss; Table 12.5-9: Summary of Conceptual Fish Habitat Offsetting Plan for Total Area Enhanced (m2) and Productivity-Adjusted Area (m2)	Comment	
DFO-031	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-125	12.5.4.1.1 Instream Habitat Loss Due to Mine Design and Development	Comment	

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DFO-032	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-127	12.5.4.2.1 Instream Habitat Loss Due to Mine Design and Development	Comment	<p>"As drift-feeding fish, further downstream of West Alexander will likely continue to rely on more local sources of invertebrates, the potential impact on the aquatic food web and productivity is predicted to be minor."</p> <p>Elaborate on the effects of reduced inputs (e.g., organics, nutrients) from West Alexander Creek to the biomass of invertebrates in downstream reaches of Alexander Creek (i.e., the local sources of invertebrates for downstream fish). Is invertebrate biomass also dependent on local (short-range) input of food and nutrients, or will the loss of habitat in West Alexander Creek affect the productivity of reaches of Alexander Creek downstream of the confluence? While Section 12.5.4.2.1 concludes a minor impact because insectivorous fish rely on short-range invertebrate drift, it does appear to take into account the potential reduction in nutrients and food that may affect downstream invertebrate biomass, and in turn, fish productivity (i.e., bottom-up effects).</p> <p>Update Table 12.5-11 to include the area for UWA1, and subsequently incorporate that area into the total area of non-fish bearing habitat loss. For a given tributary, the table should differentiate between reaches that are fish-bearing and non-fish bearing. For example, DFO notes that the first 15 m of UWA1 is potentially fish-bearing (Section 12.4.2.2.1) and is not clear about the presence/absence of fish in UWA1b.</p>
DFO-033	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-129	12.5.4.2.1 Instream Habitat Loss Due to Mine Design and Development; Table 12.5-11 (Summary of Instream Habitat Loss Due to Mine Design and Development in West Alexander Creek)	Comment	<p>On this page the authors state: "None of the flow nodes were found to exceed the 20% MAD threshold during low flow periods. This means that the Project is not anticipated to result in reduced flows below 20% MAD at any time during Construction and Pre-Production, Operations, Reclamation and Closure, or Post-Closure, which would result in significant residual effects on fish and fish habitat."</p> <p>There are various omissions that require consideration before DFO will accept this conclusion:</p> <ol style="list-style-type: none"> (1) The coarse filter EFN assessment methodology that was applied does not consider the sensitivity of the habitat and fish populations. Select an appropriate methodology and redo the assessment. (2) Provide a fish periodicity table that includes all fish species and their seasonal flow requirements at the specific stations in Alexander Creek, West Alexander Creek and Grave Creek. (3) The authors do not provide an estimate of flows and cumulative diversion quantities during low flow years. Figure 12.5-4 is limited to average monthly flow only. Provide the dry year stream flows and diversion estimates during those years. (4) Confirm that the assessment nodes are located in the most flow sensitive locations within the streams of interest. Streams in the Elk River watershed contain gaining and losing reaches. Confirm the locations of any important losing reaches that have been identified during the fish habitat assessments. (5) Address the concerns provided below on Chapter 3 regarding water demand estimates. Then, if required, adjust the diversion quantities that are used in the EFN assessment to ensure they are accurate. (6) Refer to sediment pond / mine infrastructure operating plans that will minimize potential operational impacts on flow that may cause a HADD, such as ramping. (7) Provide the name(s) of the QEP(s) that completed this assessment. Ensure QEP endorsement of the revised assessment.
DFO-034	DFO	R McCleary	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-130	12.5.4.2.2 Habitat Loss Due to Changes in Water Quantity	Comment	<p>On this page the authors state: "None of the flow nodes were found to exceed the 20% MAD threshold during low flow periods. This means that the Project is not anticipated to result in reduced flows below 20% MAD at any time during Construction and Pre-Production, Operations, Reclamation and Closure, or Post-Closure, which would result in significant residual effects on fish and fish habitat."</p> <p>There are various omissions that require consideration before DFO will accept this conclusion:</p> <ol style="list-style-type: none"> (1) The coarse filter EFN assessment methodology that was applied does not consider the sensitivity of the habitat and fish populations. Select an appropriate methodology and redo the assessment. (2) Provide a fish periodicity table that includes all fish species and their seasonal flow requirements at the specific stations in Alexander Creek, West Alexander Creek and Grave Creek. (3) The authors do not provide an estimate of flows and cumulative diversion quantities during low flow years. Figure 12.5-4 is limited to average monthly flow only. Provide the dry year stream flows and diversion estimates during those years. (4) Confirm that the assessment nodes are located in the most flow sensitive locations within the streams of interest. Streams in the Elk River watershed contain gaining and losing reaches. Confirm the locations of any important losing reaches that have been identified during the fish habitat assessments. (5) Address the concerns provided below on Chapter 3 regarding water demand estimates. Then, if required, adjust the diversion quantities that are used in the EFN assessment to ensure they are accurate. (6) Refer to sediment pond / mine infrastructure operating plans that will minimize potential operational impacts on flow that may cause a HADD, such as ramping. (7) Provide the name(s) of the QEP(s) that completed this assessment. Ensure QEP endorsement of the revised assessment.

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DFO-035	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-133	12.5.4.2.2 Habitat Loss Due to Changes in Water Quantity	Comment	<p>"During spawning months for Westslope Cutthroat Trout (April and May), flows will meet the thresholds and therefore not result in an effect to fish and fish habitat due to the Project. However, due to reduced flows exceeding the thresholds during already naturally low flow periods on the hydrograph (November to March) and during summer low flows (July to September), overwintering and rearing potential of habitat below the Main Sediment Pond will be lost. This loss in habitat/function will require offsetting to compensate for the loss in fish habitat use."</p> <p>DFO is not satisfied that all possible avoidance and mitigation strategies have been applied. Provide documentation showing that all options to conserve the lowest reach of West Alexander Creek have been considered. This includes an alternate design and adjustment of water management strategy to increase the flow regime in West Alexander Creek below the Main Sediment Pond, so that there are no adverse impacts to fish and fish habitat as a result of changes to surface water quantity. Installation of a permanent fish barrier at the confluence and exclusions of fish from that section of the reach must be proven to be the last resort.</p> <p>"The significance of the loss of instream habitat due to mine design is rated as significant. The Project will result in direct habitat loss due to mine design, removing 31,928 m² of high value Westslope Cutthroat Trout habitat, as well as habitat used by Bull Trout in WALL. The Westslope Cutthroat Trout occupying this section of the Fish and Fish Habitat LSA are suspected to be a resident population using this habitat for all life stages. How the removal of this home range will impact the potential population and how they use habitat in the rest of the Fish and Fish Habitat LSA is unknown. Any direct habitat losses (as classified under HADD) will need to be compensated for in an offsetting strategy. Offsetting measures will need to ensure the Project's effect on fish and fish habitat in West Alexander Creek, due to HADD, results in no-net loss of available habitat to both fish and benthic invertebrate communities. Thus, resulting in no net loss of instream habitat due to the Project renders the significance of the effect of direct habitat loss due to mine design and development as not significant since offsetting will result in no residual effect. Currently, there is no guideline available on whether a suspected resident population's habitat is appropriate to be included in offsetting, and further engagement with DFO and Indigenous communities will be required to develop a suitable offsetting strategy that would result in a not significant determination. Offsetting is a policy decision which will be guided by the goals of DFO and falls outside the scope of this assessment."</p>
DFO-036	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.5.4	Characterization of Residual Effects (12.5 Project Effects Assessment)	12-139	12.5.4.3.1 Instream Habitat Loss Due to Mine Design and Development; Determination of Significance	Comment	<p>The Proponent appears to be relying on DFO to make a policy decision regarding appropriate measures to offset the loss of habitat of a resident population of WCI. The main decision that DFO will make is whether or not to issue a Fisheries Act authorization. As per subsection 34.1(1) of the Fisheries Act, the Minister, prescribed person or prescribed entity, will consider various factors including whether there are measures to avoid, mitigate or offset the harmful alteration, disruption or destruction of fish habitat (HADD). It is the Proponent's responsibility to propose measures to offset the fully counterbalance the HADD. At this point, the adequacy of the proposed offsetting measures is questionable. The Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019) provides guidance on undertaking effective measures to offset death of fish and the harmful alteration, disruption or destruction of fish habitat, consistent with the fish and fish habitat protection provisions of the Fisheries Act.</p>

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DFO-037	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.6	Cumulative Effects Assessment	12-151	12.6.1 Overview of Residual Effects	Comment	The assessment of Project-related Westslope cutthroat trout (WCT) habitat loss must consider the cumulative impacts to WCT habitat in the Elk Valley and population status. The residual effects of habitat loss are not carried through the cumulative effects assessment because the EIS concludes that there will not be a net loss of habitat in the Aquatic RSA. The conclusion assumes that the loss of WCT habitat will be fully offset; however, Section 12.5.3.19 acknowledges a low confidence that destruction of a resident WCT population's habitat can be adequately offset and claims that this decision resides outside of the scope of this assessment. Per the <i>Technical Guidance for Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012</i> , mitigation measures are the elimination, reduction or control of the adverse environmental effects of a project and include restitution for any damage to the environment caused by those effects through the replacement, restoration, compensation or any other means. Under CEAA 2012, these measures must also be technically and economically feasible. Given that restitution measures are considered part of the mitigation hierarchy, measures to offset must be proposed that counterbalance the loss of fish and fish habitat. DFO refers the proponent to DFO's (2019) <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> .
DFO-038	DFO	R McCleary	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.6.3	Cumulative Effects Assessment and/or Activities Summary and Conclusions	12-153		Comment	Please add the present cumulative effects from Elkview Operations that are present in the Grave Creek watershed. These include: (1) calcification - Dry Creek, a tributary to Harmer Creek in the Grave Creek watershed is one of the most heavily calcified streams in the Elk Valley (Smit and Robinson 2023). Furthermore, the most recent monitoring report indicates that no remediation has been completed to date and that conditions are continuing to deteriorate. Smit, R. and M.D. Robinson. 2023. Teck Coal Ltd. 2022 Calcite Monitoring Program Annual Report. Prepared for Teck Coal Ltd. by Lotic Environmental Ltd. 48 pp + appendices. Report available on teck.com. (2) In the Grave Creek subpopulation, specific concerns related to westslope cutthroat trout recruitment, or the addition of new individual fish to a population as a result of successful reproduction, have been identified (Harmer Creek Evaluation of Cause Team 2023). Those recruitment concerns are: In the Harmer Creek subpopulation, reduced recruitment in the 2017, 2018 and 2019 spawn years, with the magnitude of reduced recruitment in 2018 significant enough to constitute a recruitment failure; and In the Grave Creek subpopulation, reduced recruitment in the 2018 spawn year. The Harmer Creek Evaluation of Cause Team (2023) concluded that selenium concentrations, which have increased in recent years, were one of the factors that contributed to the reduced west slope cutthroat trout recruitment within the Harmer Creek. Harmer Creek Evaluation of Cause Team. 2023. Evaluation of Cause – Reduced Recruitment in the Harmer Creek Westslope Cutthroat Trout Population. Report prepared for Teck Coal Limited. Available on teck.com. (3) Harmer Dam currently undergoing removal. When considering whether to issue a Fisheries Act authorization for any activities that will cause additional HADDs in Grave Creek, DFO must consider existing cumulative effects. The proponent must provide the required information. In your assessment, include the following relating to mitigation of existing Grave Creek cumulative effects: as of 2023, there were no source control or treatment for selenium and calcite deposition; and measures to remediate and reverse the calcite deposits had not been implemented.
DFO-039	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Chapter 12	12.8	Cumulative Effects Assessment and/or Activities Summary and Conclusions	12-196	12.6.3 Identifying Past, Present, and Reasonably Foreseeable Projects Fish salvage	Comment	"The potential of the Project to result in fish mortality was found to be not significant. This is due to the ability of the Project to mitigate all potential mortality pathways around aquatic habitats during all Project phases. The primary mitigative measure will be the salvage of fish from all directly impacted areas." Provide more detail regarding the technical feasibility and effectiveness of conducting a salvage of West Alexander Creek and translocating to Alexander Creek or another location. The Mitigation Measures section (Section 12.5.3) states that it will conduct a fish salvage as a mitigative measure and simply concludes in that section that fish mortality will be fully mitigated and therefore the potential effect is not carried forward for further assessment. DFO notes that some detail regarding the methods are provided in the Conceptual Fish Habitat Offsetting Plan (Appendix 12-E), but this does not address our concerns regarding the feasibility and effectiveness of this proposed mitigation measure.

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DFO-040	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.8	Summary and Conclusions	12-196	Fish barrier	Comment	"In addition, a permanent fish barrier will need to be designed and installed at the confluence of West Alexander and Alexander Creeks". Provide more details regarding the barrier and the anticipated effects to fish and fish habitat, noting that this barrier is not discussed elsewhere in the chapter. Was this barrier accounted for in the total footprint assessment? As per the British Columbia Professional Governance Act, provide the name and credentials of the QEP who is responsible for assuring the accuracy of the statements in this document. Provide rationale for why the lowest reaches of Alexander Creek (ALE1 and ALE2) were sampled for fish community (fish use and basic habitat data) but no other data were collected, while the upper reaches (ALE3 to ALE6) were not sampled. For habitat data, included a statement about the sensitivity of the habitat to reductions in flow. Channels with a high width-to-depth ratio, braiding, or multiple channels typically contain fish habitat that is more sensitive to flow reductions. Provide a single summary table listing all fish sampling sites, the rationale for site selection, and the data collected (i.e. spring and fall spawning habitat, overwintering habitat, Level 1 Fish Habitat Assessment Procedures, Fish and Fish Habitat Inventory Standards and Procedures, fish community, calcite assessment, nearshore sampling, benthic invertebrate sampling). "As per the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC MOE 2016), in order to confirm a site as non-fish bearing it had to be sampled for two consecutive years, both ending in no capture or observations." Provide additional information regarding the methods used to determine fish presence and the rationale for method use (e.g. were multiple fishing methods used at all site deemed non fish-bearing?; was sampling conducted over different seasons?; how was seasonal timing of sampling selected?). In cases where sites were classified as non fish-bearing due to gradient, provide the gradient profile for the watercourse and confirm that no perennial fish habitat exists upstream of gradient barriers. Confirm the specific standard method employed to determine fish-bearing status at each site and describe any deviation that occurred from this method. "Electrofishing was completed as a single, open pass over a site length of greater than 100 m or that of 10 times the bankfull width, whichever was longer." Provide rationale for why greater electrofishing effort was not deemed necessary. There is potential to miss fish with only one pass of electrofishing, particularly in larger watercourse or in habitat with high instream cover. Additionally, identify the approved methodology that the QEP used (BC Fish Stream ID Guidebook, BC RIC standards for fish collection / fish habitat maps, etc). Provide all information that was used to assign a non-fish status. "Minnow traps were only deployed when fish were captured during the first pass of electrofishing or when the stream was established as fish bearing." Provide rationale for why a second fishing method was employed after fish presence had been established. Why was minnow trapping not employed at sites where electrofishing yielded no catch? Employing a second method would have provided additional information on fish presence. "Fall spawning surveys were initially conducted at ALE10 and WALL1 since juvenile BT and EB (fall spawning species) were observed within these reaches..... A follow-up survey was completed from September 23-25, 2019 to include ALE7."
DFO-041	DFO	R McCleary	2024/feb/28	Fish and Fish Habitat	Chapter 12	12.8	Summary and Conclusions	12-199		Comment	
DFO-042	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	1.1	Study Area, Table 1. Fish and Fish Habitat Site Locations (NAD83 UTM Zone 11N)	7	Site selection	Comment	
DFO-043	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2	Methods	N/A	Site selection	Comment	
DFO-044	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.1	Distribution - Fish Inventory	7	Fish sampling	Comment	
DFO-045	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.1	Distribution - Fish Inventory	8	Fish sampling	Comment	
DFO-046	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.1	Distribution - Fish Inventory	8	Fish sampling	Comment	
DFO-047	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.3	Spawning	12	Spawning surveys	Comment	
DFO-048	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.4	Overwintering	12	Overwintering surveys	Comment	

Fisheries and Oceans Canada Technical Review Comments on the Environmental Impact Statement for the Crown Mountain Coking Coal Project

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DFO-049	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.4	Overwintering	12	Overwintering surveys	Comment	"ALE7, ALE8, ALE10, WAL1d/s, WAL2, and UTG2-1 (selected based on Figure 2) were all surveyed for overwintering potential on March 14, 2014."
DFO-050	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	2.3.5	Population Study	14	Population study methods	Comment	Provide rationale as to the adequacy of a one-day survey to characterize overwintering habitat in the LSA. This is particularly important given the influence of overwintering habitat on WCT stocks in the region.
DFO-051	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	3.1	Overview	22	Habitat characterization	Comment	Provide further information on the spatial extent of the fishing, snorkel, and spawning surveys in West Alexander Creek. Did the surveys cover the full extent of all fish-bearing reaches?
DFO-052	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	3.1	Overview	22	Habitat characterization	Comment	"Reach 7 has a low average gradient of 0.89% and is categorized as a riffle-pool morphology." Clarify how the average gradient of 0.89% was calculated, and what field measurement techniques and equipment were used. "Alexander Creek Reach 11 begins at a long bedrock falls, which was determined to be a barrier to fish migration and is considered a reference reach as it is upstream of mine impacts. These falls have resulted in a gradient greater than 20% for 20 m, limiting fish access into ALE11."
DFO-053	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	3.3.4	Overwintering	38	Overwintering results	Comment	Provide the measured or estimated height and length of these falls. "Depth and velocity were recorded for glide habitat.....riffle habitat".
DFO-054	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	3.4	Calcite Assessment	40	Habitat characterization	Comment	Clarify why depth was not recorded for pool habitat. "A low amount of calcite was observed in ALE7, ALE8, and ALE9 (Table 15). The amount observed is higher, but within range for reference streams (i.e. no upstream mining) within the Elk River watershed."
DFO-055	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	3.5	Invertebrate Community Assessment	41	Benthic invertebrate community	Comment	Clarify this statement. How much higher were the calcite levels than the mean values measured elsewhere in the Elk River watershed? Are these the calcite levels that the proponent will use for baseline monitoring to identify any additional calcite? "There were more than twice as many invertebrates collected in samples from 2017 at ALE7, ALE8, and ALE10 compared with samples in 2014."
DFO-056	DFO	J Dwyer/ B Tuite	2024/feb/28	Fish and Fish Habitat	Appendix 12-B Fish and Fish Habitat Baseline Assessment	5.2	Habitat Summary	61	Lentic habitat	Comment	Provide any additional information that may aid in interpreting these results (e.g. was there any change noted between sampling years for factors such as physical habitat features, flow levels, specific sampling location, recent or seasonal weather patterns etc.?) Additionally, the opposite result was recorded in Grave Creek, where specimen abundance was considerably higher in 2014 compared with 2017. Provide more data on how wetlands were assessed as non fish-bearing. For example, W17 has an outflow and water depth to 0.3 m. The wetland was sampled with only one method, on one occasion. Could there be a connection to fish habitat during higher flows?

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DFO-057	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	1	Introduction	1	General comment	Comment	Provide a more detailed description of the offsetting measures and how those measures would counterbalance negative effects to fish habitat. Data gaps remain which limit DFO's ability to advise the Agency on whether there are effective means of mitigating (offsetting) the predicted significant adverse effects on fish habitat. The description of the offsetting measures should include, but not be limited to, the following: <ul style="list-style-type: none"> • A description of the effectiveness of the offsetting plan i.e. an equivalency analysis that demonstrates how the offsetting plan will fully counterbalance the loss of the WCT spawning, rearing, and overwintering habitat in West Alexander Creek; • Plans and descriptions of proposed permanent structures (e.g. culverts and bridges) and a detailed evaluation of their benefit to fish and fish habitat; • A detailed description of the habitat condition and function, food supply and hydraulic conditions in Brule Creek; • A detailed description of the data and analysis used to determine the technical feasibility of establishing a self-sustaining WCT population upstream of the falls in Brule Creek; • Written support from the Province of British Columbia (the government agency responsible for management of this freshwater population) and Indigenous communities. A high degree of uncertainty remains regarding the technical feasibility of establishing a self-sustaining Westslope cutthroat trout (WCT) population upstream of the falls in Brule Creek. Without sufficient data and analysis by the proponent on habitat condition and function, food supply, and in particular, hydraulic conditions, DFO will be unable to provide advice on whether this offset would be an effective measure to offset
DFO-058	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Fish Catch and Release Plan and Feasibility	8	Fish salvage	Comment	Provide more detail regarding the technical feasibility and effectiveness of conducting a salvage of West Alexander Creek and translocating to Alexander Creek or another location. In order to assess the feasibility and effectiveness of the proposed fish salvage, DFO requires more regarding the predicted outcome of the fish salvage (e.g. expected fish mortality, change in fish density in the receiving habitat). The offsetting plan states that fish salvage impacts to the fish population in the receiving environment are not expected due to the low numbers of transferred fish. However, no data are provided to support this assertion. The proponent must demonstrate that the proposed receiving waterbody is historically under-stocked, and that the movement of fish will result in the long-term augmentation of the population. Otherwise, if the receiving waterbody is at carrying capacity, competition for limited resources will result in death of the transplanted fish, or death of fish that are already there. Support from the Province and Indigenous communities is required before this mitigation measure to avoid death of fish can be applied. <p>"A semi-permanent fish barrier (e.g., a fish fence or steel weir with a fish screen to prevent upstream movement) will be installed at the downstream extent of West Alexander Creek at the confluence with Alexander Creek, with an additional exclusion net installed approximately 100 m upstream of the barrier."</p> Clarify whether the barrier that is proposed to be installed at the confluence of West Alexander and Alexander creeks will be permanent or semi-permanent. DFO notes that the proponent refers to a "semi-permanent barrier" in the Offsetting Plan, while the Summary and Conclusions section (Section 12.8) of the Fish and Fish Habitat Assessment (Chapter 12) refers to a "permanent barrier". No further details are provided regarding this barrier.
DFO-059	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Fish Catch and Release Plan and Feasibility	8	Fish salvage	Comment	"Salvages will be conducted in multiple seasons as needed, to allow for any young-of-year or fry missed during the original salvage to mature, as they may evade capture due to their ability to hide in the interstitial spaces of coarse substrates." Clarify how it will be determined whether or not multiple seasons are needed to fully salvage West Alexander Creeks. Provide details regarding follow-up monitoring and how effectiveness of the salvage and relocation will be determined (e.g., success criteria).
DFO-060	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Fish Catch and Release Plan and Feasibility	8	Fish salvage	Comment	
DFO-061	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Fish Catch and Release Plan and Feasibility	8	Fish salvage	Comment	

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DFO-062	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.1	Local Fisheries Management Objectives	12	Selection of Offsetting Measures	Comment	<p>Update the section with a summary of the local fisheries management objectives and restoration priorities that were identified for the Elk Valley Region.</p> <p>Prior to updating, DFO recommends:</p> <p>i) that the proponent familiarize themselves with the <i>Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi)</i>, <i>British Columbia Population, in Canada</i> (DFO 2017), which establishes goals and objectives for management of the species. The overarching management goal is the long-term persistence of the species within its native range. The management objectives include: to maintain the native distribution and genetic diversity of populations; to maintain wild populations at abundance levels that prevent at-risk status assessment; and to maintain, or rehabilitate, the capacity of natural habitat to meet abundance targets for populations. Westslope cutthroat trout, British Columbia population was designated as Special Concern due to concerns regarding the introduced species (hybridization and competition), habitat loss and degradation, and increasing exploitation.</p> <p>ii) that the proponent engage with Indigenous peoples potentially affected by the offsetting plan. DFO notes that the section refers to engagement with regulators and other local groups (i.e., stakeholders), but there is no mention of early engagement with Indigenous peoples (i.e., rights holders). The following section states that "no specific feedback on fish habitat offsetting has been provided to NWP by Indigenous communities", but it is not clear that the proponent solicited feedback on the offsetting plan. In preparing an offsetting plan, the <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> (DFO 2019) highlights the importance, and good practice, for proponents to engage Indigenous peoples early in the planning phase of the offsetting plan. Indigenous peoples and the knowledge of the Indigenous peoples of Canada can inform the design of measures to offset residual effects on fish and fish habitat.</p>
DFO-063	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.2	Indigenous Communities Engagement	12	Selection of Offsetting Measures	Comment	<p>"No specific feedback on fish habitat offsetting has been provided to NWP by Indigenous communities."</p> <p>Clarify whether feedback was solicited from Indigenous groups regarding the offsetting plan. DFO recommends that the proponent engage with Indigenous peoples potentially affected by the offsetting plan. In preparing an offsetting plan, the <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> (DFO 2019) highlights the importance, and good practice, for proponents to engage Indigenous peoples early in the planning phase of the offsetting plan. Indigenous peoples and the knowledge of the Indigenous peoples of Canada can inform the design of measures to offset residual effects on fish and fish habitat.</p>
DFO-064	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.3	Stakeholder Engagement	12	Table 3. Summary of Stakeholder Engagement on Fish Habitat Offsetting for Crown Mountain	Comment	<p>Update Table 3 to include a summary of any proponent engagement with rights holders (i.e., Indigenous Peoples) on the fish habitat offsetting to date.</p>

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DFO-065	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.3.2	Field Assessment Evaluation	14	Field assessment level of effort		<p>"Field assessments were conducted at the following locations within the Aquatic RSA:</p> <ul style="list-style-type: none"> • Brûlé Creek; • Coal Creek; • Elk River Oxbow; • Elk Valley Heritage Conservation Area (multiple sites); • Hosmer Creek; • Ingham Channel (at Ingham Rest Area); • Morrissey Meadows Conservation Area, and • Weigert Creek. <p>A field assessment was also conducted at the following location within the Fish and Fish Habitat LSA:</p> <ul style="list-style-type: none"> • Alexander Creek." <p>Provide details regarding the level of effort expended assessing potential offsetting measures in the Alexander Creek watershed. DFO notes that field assessments were conducted over just three days. In addition, with the exception of the proposed Elk River Side Channel, it appears that the field assessment focussed on sites requiring restoration or enhancement, and not on potential opportunities for habitat creation. While DFO gives priority to offsetting measures that focus on the restoration of degraded fish habitat pursuant to paragraph 34.1.1(i) of the Fisheries Act, habitat creation may be the preferred option in some cases. Per the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019), offsetting measures are most likely to balance the residual effects when they benefit the specific local fish populations and fish habitat that are affected by works, undertakings or activities. It is preferable that they be identified through Weigert Creek, which impacts fish habitat through rutting and compaction of the bed and banks from vehicle use, loss of riparian habitat at the crossing due to vegetation removal, and sedimentation of downstream habitat when in use."</p> <p>"Fording crossings may contribute to sedimentation of downstream fish habitat."</p> <p>i) Provide rationale for the considerable downstream offset habitat gain associated with the crossing replacements. DFO acknowledges that rutting and compaction of the bed and banks were observed at the fording crossings, as well as a lack of riparian vegetation at and near the crossings. However, there is no information provided regarding the magnitude and extent of the downstream effects of the fording activities, apart from speculation that sedimentation could be occurring downstream of the crossing for at least 100 to 200 m based on a desk-top literature review. Despite the lack of supporting data, the proponent proposes a large habitat gain downstream of the crossings. In order to monitor the effectiveness of the restoration to the downstream habitats, baseline data of the current downstream effects (e.g. sedimentation) that are occurring is required.</p> <p>ii) Clarify how the proposed offsetting measure will increase habitat connectivity given that the current crossings are fordings, not culverts.</p> <p>iii) Provide traffic use data to confirm activity at the crossings (i.e., vehicle types, numbers, and users). The proponent proposes undertaking effectiveness monitoring to confirm that the offsetting habitats are functioning as intended, including installing traffic counters prior to construction to determine the number of vehicles typically fording the creek and comparing to the number of vehicles utilizing the proposed bridge crossings. However, this must be done prior to proposing the crossings as restoration options, in order for DFO to determine whether this would be an effective offsetting measure.</p> <p>iv) Identify if any party is responsible for vehicle access on the forest service road and clarify whether they can implement a vehicle access management plan to limit traffic on the forest service road.</p>
DFO-066	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Selected Conceptual Offsetting Measures	20	3.4.1 Weigert Creek Crossing Replacements	Comment	

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DFO-067	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Selected Conceptual Offsetting Measures	24	3.4.2 Grace Creek Crossing Replacements	Comment	<p>"To improve habitat connectivity within Grace Creek, NWP is proposing to replace current road crossing structures downstream of the railway to restore habitat connectivity to Grace Creek."</p> <p>"The proposed Grace Creek crossing replacements are located within CanWeI's land tenure. NWP has an ongoing relationship with CanWeI, has permission from CanWeI for land access and land use, and expects to be able to get an agreement in place for the proposed offsets."</p> <p>Clarify whether the crossings identified on Grace Creek are the responsibility of CanWeI. Per Principle 3 of the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019), the restoration of orphaned sites (those with no known responsible party or owner or with no possibility of restoration due to company closure, bankruptcy or other similar circumstance) could be considered an appropriate measure; however, restoration of degraded sites, for which the proponent, another person, or an organization is responsible for the environmental damage, should not be considered appropriate measures to offset because such sites should be brought into compliance by the responsible party. It is also important to note, that removal of anthropogenic barriers to fish migration must not provide opportunities for the introduction of non-indigenous species. For Grace Creek, barriers in the lower section of the creek are the reason that the isolated pure-strain population in the upper watershed has persisted.</p> <p>DFO acknowledges that additional work is required to determine how much credit would be given for this type "Prior to the introduction of any WCT to Brulé Creek, a detailed feasibility study will be conducted pending Project approval to determine whether a population of WCT can be sustained long-term within the watercourse."</p> <p>Provide an assessment of the feasibility of the proposed offsetting measure. A high degree of uncertainty remains regarding the technical feasibility of establishing a self-sustaining Westslope cutthroat trout (WCT) population upstream of the falls in Brulé Creek. Without sufficient data and analysis by the proponent regarding the habitat condition and function, food supply, and in particular, hydraulic conditions, DFO will be unable to provide advice on whether this offset would be an effective measure to offset the destruction of WCT habitat.</p> <p>"Scour leading to bank collapse at the Garrett Ready Mix operation site on the left downstream bank caused deposition of concrete and asphalt and other deleterious materials on the slope of the bank, further confining the Elk River. The banks of the side channel consist of silt deposition material (downstream right bank) and the heavily scoured, debris covered bank lacking riparian vegetation."</p> <p>Clarify whether the restoration of the degraded habitat is the responsibility of Garrett Ready Mix or another "Creation of a permanent bed and banks of the channel of the watercourse will require analysis of substrate and underlying geology, a review of the anticipated hydroperiod to accommodate snow-melt runoff and dry periods in the fall, and the quantification of available habitat upstream and downstream of the proposed channel restoration area. With proper analysis and engineering it is anticipated that the restoration of the wetted channel and associated habitat will be feasible and long-lasting."</p> <p>Provide a more detailed assessment of the feasibility of the proposed offsetting measure. It appears that the conclusion that the offsetting measure will be feasible is contingent on important analyses that have not yet</p>
DFO-068	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Selected Conceptual Offsetting Measures	29	3.4.3 Brulé Creek Fish Introduction	Comment	
DFO-069	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Selected Conceptual Offsetting Measures	31	3.4.4 Elk River Channel Enhancement	Comment	
DFO-070	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Selected Conceptual Offsetting Measures	38	3.4.6 Ingham Channel	Comment	

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DFO-071	DFO	J Dwyer/ B Tuite	2024/Feb/28	Fish and Fish Habitat	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	4	Characterization of Offsetting Value	39		Comment	<p>Provide more detail regarding the development of Relative Habitat Values (RHVs). DFO requires a better understanding of how the RHVs were calculated as they currently appear arbitrary. A summary table should be provided showing:</p> <ul style="list-style-type: none"> initial RHVs of the existing and proposed habitat types based on literature, guidance, and professional opinion the sequence of steps that were factored in to account for uncertainty, time lag, and, in the case of restoration/enhancement offsets, the value of the existing degraded habitat. final RHVs <p>Given that the intention of the offsetting measures is to counterbalance the particular adverse effects associated with the Project, the Proponent should consider the scientific soundness of assigning a final RHV greater than 1.0 for an offsetting measure that does not provide functioning habitat for WCT. Further guidance regarding determining the amount of measures to offset is provided in the <i>Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act</i> (DFO 2019)</p>
DFO-072	DFO	R McCleary	2024/Feb/28		Chapter 3	3.7.6.11	Other Water Requirements	3-86		Comment	<p>How does your estimate of dust suppression / vehicle washing compare to other coal mines in the Elk Valley? For example, Fording River Operations is licensed for 30,000 m³/day for dust suppression and 5,184 m³/day for vehicle washing or 12,842,000 for year for these two activities. For "Other Usage", your numbers seem low at 130,000 m³ per year. This is 1% of Fording River demand for their other usage. Complete an environmental flow needs assessment for each of the two source streams Grave Creek and Alexander Creek. In this assessment confirm your estimate of the cumulative diversion amount (e.g., 640,000 m³/year) and provide a monthly breakdown. Do these values align with the values that will be included in your water licence applications? The Grave Creek Reservoir has a storage capacity of 100,000 m³. What is the water source after the storage is exhausted during the fall fish migration and overwintering period (Sept - Mar)? The statement of no significant effects from water diversion in Chapter 10 doesn't appear plausible given the demand from these small fish bearing water bodies during the Sept - Mar period.</p> <p>As per the British Columbia Professional Governance Act, provide the name and credentials of the QEP who is responsible for assuring the accuracy of the statements in this document.</p>
DFO-073	DFO	R McCleary	2024/Feb/28	Surface Water Quantity Assessment	Chapter 10	10.8	Summary and Conclusions	12-97		Comment	
DFO-074	DFO	R McCleary	2024/Feb/28	Surface Water Quantity Assessment	Appendix 10A	2.6	Mine Components	5		Comment	<p>How is the conceptual diagram linked with Chapter 3 water use? Does this Appendix focus on changes in runoff due to alterations in seepage, evaporation and groundwater flow while excluding changes in flow due to consumptive water uses within the mine?</p> <p>The most significant changes in flow would occur during the lowest flow months. The figures are designed in such a way that the magnitude of change in flow during these low flow periods is difficult to discern.</p>
DFO-075	DFO	R McCleary	2024/Feb/28	Surface Water Quantity Assessment	Appendix 10A	3.6	Stream Flow and Water Quality Results	17		Comment	<p>There is no indication that the author David Hoekstra is a Registered Professional in the Province of British Columbia. Please confirm that the author is authorized to practice engineering in British Columbia.</p>



Fisheries and Oceans
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Canada

**Attachment 2: Fisheries and Oceans Canada Letter to the
Impact Assessment Agency of Canada
Regarding the Crown Mountain Coking Coal
Project, January 10, 2023**



Fisheries and Oceans
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Canada

Pacific Region
Ecosystem Management Branch
200 – 401 Burrard Street
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Direction de la gestion des écosystèmes
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January 10, 2023

Our file *Notre référence*
14-HPAC-01085

Impact Assessment Agency of Canada
Attn: Stefan Crampton
Project Manager
210A-757 West Hastings St.,
Vancouver, BC, V6C 3M2

Via email: Stefan.Crampton@iaac-aeic.gc.ca

Subject: Crown Mountain Coking Coal Project

Dear Stefan Crampton:

Fisheries and Oceans Canada (DFO) understands that NWP Coal Canada Ltd. (the Proponent) proposes to construct and operate the Crown Mountain Coking Coal Project (the Project), an open-pit metallurgical coal mine in the Elk Valley, approximately 12 km northeast of Sparwood, British Columbia. At the request of the Impact Assessment Agency of Canada, DFO reviewed and provided comments on the conformity of the Proponent's Environmental Impact Statement¹ (EIS) with the EIS Guidelines on September 9, 2022. This letter is intended to highlight DFO concerns regarding potential effects of the Project on Westslope cutthroat trout, British Columbia population (WCT), an aquatic species listed under the *Species at Risk Act* as Special Concern.

WCT was designated as Special Concern due to concerns regarding introduced species (hybridization and competition), habitat loss and degradation, and increasing exploitation. The *Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi), British Columbia Population, in Canada* (federal Management Plan)² establishes goals and objectives for management of the species. The overarching management goal is the long-term persistence of the species within its native range. The management objectives include: to maintain the native distribution and genetic diversity of populations; to maintain wild populations at abundance levels that prevent at-risk status assessment; and to maintain, or rehabilitate, the capacity of natural habitat to meet abundance targets for populations.

¹ NWP Coal Canada Ltd. Crown Mountain Coking Coal Project—Application for an Environmental Assessment Certificate / Environmental Impact Assessment. Submitted to Impact Assessment Agency of Canada on August 22, 2022.

² Fisheries and Oceans Canada. 2016. Management Plan for the Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*), British Columbia Population, in Canada. Species at Risk Act Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 115 pp

The EIS identifies that the proposed Project would destroy approximately 6 km of West Alexander Creek and its associated tributaries and riparian habitat, which support resident WCT. The Project also has the potential to result in mortality of resident fish. Given the location of the Project and potential impacts to WCT, DFO has serious concerns about ability of the Project to be conducted in a manner consistent with the federal Management Plan, and the availability of appropriate measures to offset residual effects to WCT habitat and to mitigate death of WCT.

Given the at-risk status of WCT, the consequences of habitat loss for this species should be considered in context of the overall status of the population, current threats to its survival, and the objectives of the federal Management Plan. DFO is of the opinion that the assessment of Project-related WCT habitat loss should consider:

1. Cumulative impacts to WCT habitat in the Elk Valley and population status;
2. Potential impacts of the Project on achievement of the management objectives, such as impacts to the long-term persistence of the species within its native range, the maintenance of genetic diversity of populations, and impacts to the ability of the natural habitat to meet abundance targets for populations.

DFO recommends that the Proponent demonstrate how the Project could be undertaken such that it does not impede the achievement of management objectives for WCT, in consideration of cumulative impacts to the population.

The EIS presents conceptual offsetting measures including removal of Ministry of Transportation and Infrastructure culverts, removal of invasive species, and addition of large woody debris to existing habitats. However, the EIS concludes that *the habitat loss is likely to result in significant adverse environmental effects due to uncertainty in whether appropriate offsetting measures exist to counterbalance the complete habitat destruction of a suspected resident population of WCT*. DFO is similarly concerned that the proposed offset measures will not counterbalance effects of the project on WCT. Additionally DFO is concerned about the ability of the proposed offsets to meet DFO policy objectives³.

The EIS proposes fish salvage in West Alexander Creek as a measure to mitigate death of WCT and concludes that there are no residual effects of the Project in relation to fish mortality. DFO cautions that there is significant uncertainty as to the effectiveness of fish salvage of this scale to prevent death of WCT. The EIS does not provide details as to where the suspected resident population of WCT would be relocated. More information is needed on whether the receiving environment would have capacity to support relocated fish and what the consequence of this relocation would be to the population. However, even if the Proponent provides this information, uncertainty will remain.

Based on the Project information contained in the EIS, including the scale of destruction of WCT habitat, the proposed offset concepts, and the potential effectiveness of fish salvage, DFO's view is that the impacts of the Project would not be adequately avoided, mitigated, and offset. In order to avoid, mitigate and offset effects to WCT, both the scale of Project impacts should be reduced and the scale and scope of offsetting should be substantially increased. DFO suggests, in order to

³ Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the *Fisheries Act*, Fisheries and Oceans Canada, December 2019

appropriately counterbalance effects of the Project on WCT, that the Proponent propose offsets that benefit the isolated resident fish that would be directly impacted by the Project. DFO recommends that the Proponent develop an offset proposal that is consistent with DFO policy, and that the Proponent engage with Indigenous Nations during proposal development.

If you have any questions with the content of this letter, please contact James Dwyer at our Vancouver office by email at James.Dwyer@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

<Original signed by>

David Carter
Manager
Fish and Fish Habitat Protection Program